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38. FLORAL BIOLOGY AND ECONOMIC VALUES OF *HYPTIS SUAVEOLENS* (L.) POIT. IN MEXICO

The genus *Hyptis* with about 400 species (Hickey and King 1988) is a member of the Subfamily Nepetoideae, Tribe Ocimeae, Subtribe Hyptidinae (Cantino *et al.* 1992). It is Neotropical with only a few weed species extending into the Palaeotropics. Brazil, with over 250 species, is considered the centre of diversity for this genus, with most of them growing as narrow endemics. In Mexico, there are 32 species out of which 22 are endemics (Ramamoorthy and Elliott 1993). *H. suaveolens* has wild and cultivated forms. The wild form is a weedy species and widespread in Mexico, extending its distribution to the Far East of Palaeotropics. The cultivated forms are confined to Mexico. Both forms flower from September to October. The wild flowers are violet with a nectar guide on the upper lip and have anthers and stigma concealed in the carina-like central lobe of the lower lip, set up under tension for explosive release. Foraging bees cause the tense carinal lobe to reflex and explosively release the sex organs, and effect sternotribic pollination (Aluri 1990). The wild form largely differs from the cultivated ones in plant height, stem colour, calyx size, flower colour, manner of carinal lobe releasing the sex organs, seed colour, etc. The cultivated forms are distinguishable into two varieties: i. white flowers with violet nectar guide and ii. white flowers lacking nectar guide. The first form exhibits characters intermediate between the wild and the second form. However, both the cultivated forms release the anthers and stigma passively from the carinal lobe, and contain larger fruiting calyx, requiring an external agent for seed dispersal. The white form with the nectar guide is found in some provinces of Mexico, while the other is completely confined to the State of Colima. There are no reports on the occurrence of cultivated forms of *H. suaveolens* elsewhere.

Close examination of the wild and cultivated forms shows that the cultivated forms might have originated from the wild due to continuous isolation under human care without sexual reproduction with their natural populations. Although there are morphological and functional differences in the three flower forms, they mate well with each other. The foraging bees also do not discriminate between the violet and white flowers and forage alternately between them, transferring pollen from one form to another throughout their flowering season.

H. suaveolens is locally known as 'Chia' or 'Chan'. Its seeds are used in sauces, and as a thickening agent in the preparation of cookies and biscuits. A traditional drink is also prepared with the seed flour mixed with ice water and honey. It is good for digestion and has a cooling effect on the stomach. 'Chan' ice is also sold in the market. The seeds yield 18-23% protein and 13-23% oil content, indicating their high nutritive value. The oil is used in cooking and is an excellent preservative for colours. The leaves are used as an appetisers, to combat indigestion, stomach pain, nausea, flatulence and cold, for wound healing and skin infections. The leaves also yield an essential oil, which inhibits the growth of fungi such as *Candida albicans* and *Helminthosporium oryzae,* and bacteria such as potato pathogenic bacteria (Pandey *et al.* 1981,

1982; Singh *et al.* 1983; Tiwari *et al.* 1987; Fun and Svendsen 1990; Rojas *et al.* 1992).

Preliminary research on food and medicinal value of *H. suaveolens* shows that the weed can be best exploited as a new potent food crop by developing countries, which have food grain crises, and as a potent antifungal and antibacterial agent. The results of our field studies are encouraging to include *H. suaveolens* in the list of new crops. The cultivated forms are particularly suitable as they have a larger fruiting calyx in which the seeds are retained for a longer time, facilitating harvest. Further, the wild and cultivated forms during their flowering phase sustain a variety of bees, especially the honeybee *Apis mellifera*, which voraciously gathers pollen and nectar exhibiting fidelity. Therefore, the potential of *H. suaveolens* for agricultural use seems great, as it is a low-water user and can grow on moist to dry soils.

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39. *THOTTEA DINGHOUI* SWARUP, FAMILY ARISTOLOCHIACEAE, A NEW RECORD FOR TAMIL NADU

(*With one text-figure*)

While botanizing in the Kalakad-Mundanthurai Tiger Reserve (KMTR) in Agastyamalai hills, Tamil Nadu, an interesting specimen, which showed close affinity to *Thottea barberi* (Gamble) Ding Hou. was collected. On comparing the specimen with the descriptions